ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences

the condition of education 2006

INDICATOR 16

Reading and Mathematics Score Trends by Age

The indicator and corresponding tables are taken directly from *The Condition of Education 2006.* Therefore, the page numbers may not be sequential.

Additional information about the survey data and supplementary notes can be found in the full report. For a copy of *The Condition of Education 200*6, visit the NCES website (http://nces.ed.gov/pubsearch/pubsinfo.sap?pubid=2006071) or contact ED PUBs at 1-877-4ED-PUBS.

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Academic Outcomes

Reading and Mathematics Score Trends by Age

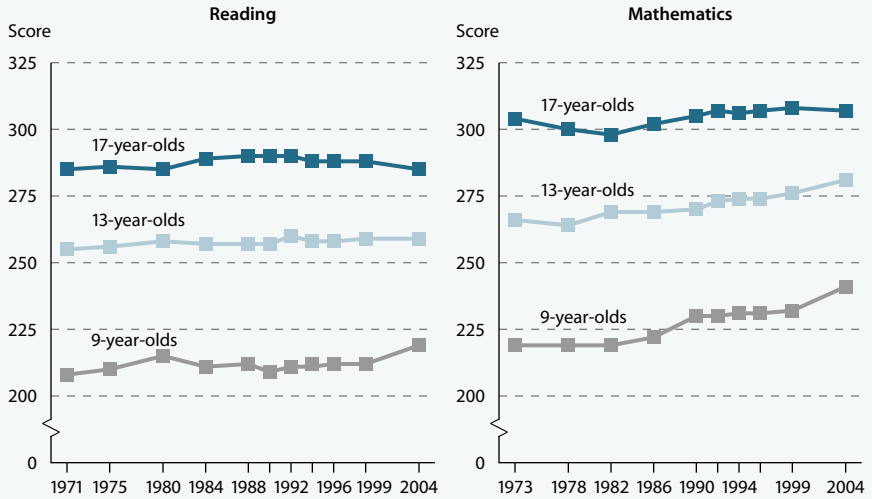
The average reading and mathematics scores on the long-term trend National Assessment of Educational Progress were higher in 2004 than in the early 1970s for 9- and 13-year-olds.

The long-term trend National Assessment of Educational Progress (NAEP) has provided information on the reading and mathematics achievement of 9-, 13-, and 17-year-olds in the United States since the early 1970s and allows one to measure progress over time. These results may differ from the main NAEP results presented in *indicators 12*, *13*, *14*, and *15* as the content of the long-term trend assessment has remained consistent over time, while the main NAEP undergoes changes periodically (see *supplemental note 4*).

NAEP long-term trend results indicate that the reading and mathematics achievement of 9- and 13-year-olds improved between the early 1970s and 2004. In reading, 9-year-olds scored higher in 2004 than in any previous assessment year, with an increase of 7 points between 1999 and 2004. The 2004 average scores for 13-year-olds were not measurably different from the 1999 average score, but still were higher than the scores in 1971 and 1975. In mathematics, the achievement of 9- and 13-year-olds in 2004 was the highest of any assessment year. The performance of 17-year-olds on the 2004 reading and mathematics assessment, however, was not measurably different from their performance on either the first reading and mathematics assessments (in 1971 and 1973, respectively) or the 1999 reading and mathematics assessments.

The performance of subgroups of students generally mirrored the overall national patterns; however, there were some notable differences. The average reading and mathematics scores of Black and Hispanic 9-year-olds in 2004 were the highest of any assessment year (see supplemental tables 16-1 and 16-2). For Black 13-year-olds, the reading and mathematics scores were higher in 2004 than the scores in the early 1970s, and the 2004 mathematics score was higher than in any previous assessment year. For Hispanic 13-year-olds, reading and mathematics scores were higher in 2004 than in any previous assessment year. In contrast to the overall national results, the average scores of Black and Hispanic 17-year-olds were higher in 2004 than in the early 1970s. Black 17-year-olds improved 25 points in reading between 1971 and 2004, and 15 points in mathematics between 1973 and 2004 on a 0–500 point scale. Hispanic 17-year-olds improved 12 points in reading between 1975 (the first year the reading achievement of Hispanics was specifically measured) and 2004, and 12 points in mathematics between 1973 and 2004.

NAEP SCORES: Average reading and mathematics scale scores on the long-term trend National Assessment of Educational Progress (NAEP), by age: Various years, 1971 through 2004



NOTE: NAEP has two distinct assessment programs: the long-term trend assessment program and the main assessment program. Data from the long-term trend program, presented in this indicator, come from subject assessments that have remained substantially the same since the early 1970s in order to measure and compare student achievement over time. In contrast, data from the main NAEP assessment program, presented in *indicators 12*, *13*, *14*, and *15*, come from subject assessments that are periodically adapted to employ the latest advances in assessment methodology and to reflect changes in educational objectives and curricula. Because the instruments and methodologies of the two assessment programs are different, it is not possible to compare long-term trend results with the main assessment results (see *supplemental note 4* for more information on the two NAEP programs). NAEP scores range from 0 to 500.

SOURCE: Perie, M., Moran, R., and Lutkus, A.D. (2005). *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (NCES 2005-464), figures 2-1 and 2-4. Data from U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1971–2004 Long-Term Trend Reading and Mathematics Assessments.

FOR MORE INFORMATION:

Supplemental Note 4

Supplemental Tables 16-1, 16-2

Reading and Mathematics Score Trends by Age

Table 16-1. Average reading scale scores on the long-term trend National Assessment of Educational Progress (NAEP), by age, sex, and race/ethnicity: Various years, 1971 through 2004

Age, sex, and race/ethnicity	1971	1975	1980	1984	1988	1990	1992	1994	1996	1999	2004
9-year-olds											
Total	**208**	**210**	**215**	**211**	**212**	**209**	**211**	**211**	**212**	**212**	**219**
Sex											
Male	201	204	210	207	207	204	206	207	207	209	216
Female	214	216	220	214	216	215	215	215	218	215	221
Race/ethnicity[1]											
White	214	217	221	218	218	217	218	218	220	221	226
Black	170	181	189	186	189	182	185	185	191	186	200
Hispanic	—	183	190	187	194	189	192	186	195	193	205
13-year-olds											
Total	**255**	**256**	**258**	**257**	**257**	**257**	**260**	**258**	**258**	**259**	**259**
Sex											
Male	250	250	254	253	252	251	254	251	251	254	254
Female	261	262	263	262	263	263	265	266	264	265	264
Race/ethnicity[1]											
White	261	262	264	263	261	262	266	265	266	267	266
Black	222	226	233	236	243	241	238	234	234	238	244
Hispanic	—	232	237	240	240	238	239	235	238	244	242
17-year-olds											
Total	**285**	**286**	**285**	**289**	**290**	**290**	**290**	**288**	**288**	**288**	**285**
Sex											
Male	279	280	282	284	286	284	284	282	281	281	278
Female	291	291	289	294	294	296	296	295	295	295	292
Race/ethnicity[1]											
White	291	293	293	295	295	297	297	296	295	295	293
Black	239	241	243	264	274	267	261	266	266	264	264
Hispanic	—	252	261	268	271	275	271	263	265	271	264

— Not available.

[1] Black includes African American and Hispanic includes Latino. Race categories exclude Hispanic origin.

NOTE: Includes public and private schools. Excludes persons not enrolled in school and those who were unable to be tested due to limited proficiency in English or a disability. Totals include other race/ethnicity categories not separately shown. The NAEP scores range from 0 to 500 and have been evaluated at certain performance levels. Students at reading score level 150 are able to follow brief written directions and carry out simple, discrete reading tasks. Students at reading score level 200 are able to understand, combine ideas, and make inferences based on short uncomplicated passages about specific or sequentially related information. Students at reading score level 250 are able to search for specific information, interrelate ideas, and make generalizations about literature, science, and social studies materials. Students at reading score level 300 are able to find, understand, summarize, and explain relatively complicated literary and informational material. Students at reading score level 350 can extend and restructure the ideas presented and can synthesize and learn from specialized and complex texts.

SOURCE: Perie, M., Moran, R., and Lutkus, A.D. (2005). *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (NCES 2005-464), figures 2-1, 3-1, 3-2, and 3-3. Data from U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1971–2004 Long-Term Trend Reading Assessment.

Reading and Mathematics Score Trends by Age

Table 16-2. Average mathematics scale scores on the long-term trend National Assessment of Educational Progress (NAEP), by age, sex, and race/ethnicity: Various years, 1973 through 2004

Age, sex, and race/ethnicity	1973	1978	1982	1986	1990	1992	1994	1996	1999	2004
9-year-olds										
Total	**219**	**219**	**219**	**222**	**230**	**230**	**231**	**231**	**232**	**241**
Sex										
Male	218	217	217	222	229	231	232	233	233	243
Female	220	220	221	222	230	228	230	229	231	240
Race/ethnicity[1]										
White	225	224	224	227	235	235	237	237	239	247
Black	190	192	195	202	208	208	212	212	211	224
Hispanic	202	203	204	205	214	212	210	215	213	230
13-year-olds										
Total	**266**	**264**	**269**	**269**	**270**	**273**	**274**	**274**	**276**	**281**
Sex										
Male	265	264	269	270	271	274	276	276	277	283
Female	267	265	268	268	270	272	273	272	274	279
Race/ethnicity[1]										
White	274	272	274	274	276	279	281	281	283	288
Black	228	230	240	249	249	250	252	252	251	262
Hispanic	239	238	252	254	255	259	256	256	259	265
17-year-olds										
Total	**304**	**300**	**298**	**302**	**305**	**307**	**306**	**307**	**308**	**307**
Sex										
Male	309	304	301	305	306	309	309	310	310	308
Female	301	297	296	299	303	305	304	305	307	305
Race/ethnicity[1]										
White	310	306	304	308	309	312	312	313	315	313
Black	270	268	272	279	289	286	286	286	283	285
Hispanic	277	276	277	283	284	292	291	292	293	289

[1] Black includes African American and Hispanic includes Latino. Race categories exclude Hispanic origin.

NOTE: Includes public and private schools. Excludes persons not enrolled in school and those who were unable to be tested due to limited proficiency in English or a disability. Totals include other race/ethnicity categories not separately shown. The NAEP scores range from 0 to 500 and have been evaluated at certain performance levels. A score of 150 implies the knowledge of some basic addition and subtraction facts, and most students at this level can add 2-digit numbers without regrouping. They recognize simple situations in which addition and subtraction apply. A score of 200 implies considerable understanding of 2-digit numbers and knowledge of some basic multiplication and division facts. A score of 250 implies an initial understanding of the four basic operations. Students at this level can also compare information from graphs and charts, and are developing an ability to analyze simple logical relations. A score of 300 implies an ability to compute decimals, simple fractions, and percents. Students at this level can identify geometric figures, measure lengths and angles, and calculate areas of rectangles. They are developing the skills to operate with signed numbers, exponents, and square roots. A score of 350 implies an ability to apply a range of reasoning skills to solve multistep problems. Students at this level can solve routine problems involving fractions and percents, recognize properties of basic geometric figures, and work with exponents and square roots.

SOURCE: Perie, M., Moran, R., and Lutkus, A.D. (2005). *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (NCES 2005-464), figures 2-4, 3-5, 3-6, and 3-7. Data from U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1973–2004 Long-Term Trend Mathematics Assessment.

Reading and Mathematics Score Trends by Age

Table S16. Standard errors for the average reading and mathematics scale scores on the long-term trend National Assessment of Educational Progress (NAEP), by age: Various years, 1971 through 2004

Age	1971	1973	1975	1978	1980	1982	1984	1986	1988	1990	1992	1994	1996	1999	2004
Reading															
9-year-olds	1.0	†	0.7	†	1.0	†	0.8	†	1.1	1.2	0.9	1.2	1.0	1.3	1.1
13-year-olds	0.9	†	0.8	†	0.9	†	0.6	†	1.0	0.8	1.2	0.9	1.0	1.0	1.0
17-year-olds	1.2	†	0.8	†	1.2	†	0.8	†	1.0	1.1	1.1	1.3	1.1	1.3	1.2
Mathematics															
9-year-olds	†	0.8	†	0.8	†	1.1	†	1.0	†	0.8	0.8	0.8	0.8	0.8	0.9
13-year-olds	†	1.1	†	1.1	†	1.1	†	1.2	†	0.9	0.9	1.0	0.8	0.8	1.0
17-year-olds	†	1.1	†	1.0	†	0.9	†	0.9	†	0.9	0.9	1.0	1.2	1.0	0.8

† Not applicable.

SOURCE: Perie, M., Moran, R., and Lutkus, A.D. (2005). *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (NCES 2005-464), figures 2-1 and 2-4. Data from U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1971–2004 Long-Term Trend Reading and Mathematics Assessments.

Reading and Mathematics Score Trends by Age

Table S16-1. Standard errors for the average reading scale scores on the long-term trend National Assessment of Educational Progress (NAEP), by age, sex, and race/ethnicity: Various years, 1971 through 2004

Age, sex, and race/ethnicity	1971	1975	1980	1984	1988	1990	1992	1994	1996	1999	2004
9-year-olds											
Total	**1.0**	**0.7**	**1.0**	**0.8**	**1.1**	**1.2**	**0.9**	**1.2**	**1.0**	**1.3**	**1.1**
Sex											
Male	1.1	0.8	1.1	1.0	1.4	1.7	1.3	1.3	1.4	1.6	1.4
Female	1.0	0.8	1.1	0.9	1.3	1.2	0.9	1.4	1.1	1.5	1.0
Race/ethnicity											
White	0.9	0.7	0.8	0.9	1.4	1.3	1.0	1.3	1.2	1.6	1.1
Black	1.7	1.2	1.8	1.3	2.4	2.9	2.2	2.3	2.6	2.3	2.2
Hispanic	†	2.2	2.3	3.0	3.5	2.3	3.1	3.9	3.4	2.7	1.7
13-year-olds											
Total	**0.9**	**0.8**	**0.9**	**0.6**	**1.0**	**0.8**	**1.2**	**0.9**	**1.0**	**1.0**	**1.0**
Sex											
Male	1.0	0.8	1.1	0.7	1.3	1.1	1.7	1.2	1.2	1.3	1.2
Female	0.9	0.9	0.9	0.7	1.0	1.1	1.2	1.2	1.2	1.2	1.3
Race/ethnicity											
White	0.7	0.7	0.7	0.6	1.1	0.9	1.2	1.1	1.0	1.2	1.0
Black	1.2	1.2	1.5	1.2	2.4	2.2	2.3	2.4	2.6	2.4	2.0
Hispanic	†	3.0	2.0	2.0	3.5	2.3	3.5	1.9	2.9	2.9	1.6
17-year-olds											
Total	**1.2**	**0.8**	**1.2**	**0.8**	**1.0**	**1.1**	**1.1**	**1.3**	**1.1**	**1.3**	**1.2**
Sex											
Male	1.2	1.0	1.3	0.8	1.5	1.6	1.6	2.2	1.3	1.6	1.5
Female	1.3	1.0	1.2	0.9	1.5	1.2	1.1	1.5	1.2	1.4	1.3
Race/ethnicity											
White	1.0	0.6	0.9	0.9	1.2	1.2	1.4	1.5	1.2	1.4	1.1
Black	1.7	2.0	1.8	1.2	2.4	2.3	2.1	3.9	2.7	1.7	2.7
Hispanic	†	3.6	2.7	2.9	4.3	3.6	3.7	4.9	4.1	3.9	2.9

† Not applicable.

SOURCE: Perie, M., Moran, R., and Lutkus, A.D. (2005). *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (NCES 2005-464), figures 2-1, 3-1, 3-2, and 3-3. Data from U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1971–2004 Long-Term Trend Reading Assessment.

Reading and Mathematics Score Trends by Age

Table S16-2. Standard errors for the average mathematics scale scores on the long-term trend National Assessment of Educational Progress (NAEP), by age, sex, and race/ethnicity: Various years, 1973 through 2004

Age, sex, and race/ethnicity	1973	1978	1982	1986	1990	1992	1994	1996	1999	2004
9-year-olds										
Total	**0.8**	**0.8**	**1.1**	**1.0**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.9**
Sex										
Male	0.7	0.7	1.2	1.1	0.9	1.0	1.0	1.2	1.0	1.1
Female	1.1	1.0	1.2	1.2	1.1	1.0	0.9	0.7	0.9	1.1
Race/ethnicity										
White	1.0	0.9	1.1	1.1	0.8	0.8	1.0	1.0	0.9	0.9
Black	1.8	1.1	1.6	1.6	2.2	2.0	1.6	1.4	1.6	2.1
Hispanic	2.4	2.2	1.3	2.1	2.1	2.3	2.3	1.7	1.9	2.0
13-year-olds										
Total	**1.1**	**1.1**	**1.1**	**1.2**	**0.9**	**0.9**	**1.0**	**0.8**	**0.8**	**1.0**
Sex										
Male	1.3	1.3	1.4	1.1	1.2	1.1	1.3	0.9	0.9	1.2
Female	1.1	1.1	1.1	1.5	0.9	1.0	1.0	1.0	1.1	1.0
Race/ethnicity										
White	0.9	0.8	1.0	1.3	1.1	0.9	0.9	0.9	0.8	0.9
Black	1.9	1.9	1.6	2.3	2.3	1.9	3.5	1.3	2.6	1.6
Hispanic	2.2	2.0	1.7	2.9	1.8	1.8	1.9	1.6	1.7	2.0
17-year-olds										
Total	**1.1**	**1.0**	**0.9**	**0.9**	**0.9**	**0.9**	**1.0**	**1.2**	**1.0**	**0.8**
Sex										
Male	1.2	1.0	1.0	1.2	1.1	1.1	1.4	1.3	1.4	1.0
Female	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.4	1.0	0.9
Race/ethnicity										
White	1.1	0.9	0.9	1.0	1.0	0.8	1.1	1.4	1.1	0.7
Black	1.3	1.3	1.2	2.1	2.8	2.2	1.8	1.7	1.5	1.6
Hispanic	2.2	2.3	1.8	2.9	2.9	2.6	3.7	2.1	2.5	1.8

SOURCE: Perie, M., Moran, R., and Lutkus, A.D. (2005). *NAEP 2004 Trends in Academic Progress: Three Decades of Student Performance in Reading and Mathematics* (NCES 2005-464), figures 2-4, 3-5, 3-6, and 3-7. Data from U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1973–2004 Long-Term Trend Mathematics Assessment.